Listing of Claims:

1. A light emitting semiconductor device with spatially distributed current injection, comprising:

~~a low electrode;~~

a substrate ~~formed on the lower electrode~~;

a ~~triangle mesa~~semiconductor structure with an active layer and a waveguide formed on the substrate ~~for lateral confinement of light~~;

~~a triangle~~ an optical cavity formed ~~in~~on the semiconductor structure and shaped as a triangle mesa structure;

a lower electrode formed below one of the substrate and the semiconductor structure; and

an upper electrode ~~formed~~ on ~~the~~ a top of the triangle mesa structure~~; and~~ formed as a plurality of contact spots ~~formed on the upper electrode~~ corresponding to maxima of optical field intensity for at least one optical mode on a lateral plane in the optical cavity.

2. (Original) The device of claim 1 wherein the triangle mesa structure is truncated.

3. (Original) The device of claim 1 wherein the device is one selected from the group consisting of a light emitting diode (LED), a semiconductor laser diode, a resonance cavity LED, a unipolar semiconductor laser diode, a light output device, a semiconductor laser gyroscope and a semiconductor device generating light.

4. (Original) The device of claim 1wherein the triangle optical mesa structure is truncated.

5. (Original) The device of claim 1 further comprising:

an additional plurality of triangle mesa structures formed on the substrate wherein each of the additional triangle mesa structures includes a structure generally the same as the triangle mesa structure;

an additional plurality of upper electrodes respectively formed on and respectively corresponding to the additional triangle mesa structures; and

a plurality of trenches providing optical connection among the triangle mesa structure and the additional triangle mesa structures.

6. (Original) The device of claim 5 wherein the triangle mesa structure and the additional triangle mesa structures are formed on the substrate in a topology selected from the group consisting of an array, cascade, lattice, super lattice, matrix, hollow matrix, hexagon and polygon.

7. (Original) The device of claim 5 wherein the triangle mesa structure and the additional triangle mesa structures are truncated.

8. (Original) The device of claim 5 further comprising a light output structure formed on the substrate for controlling light output direction.

9. (Original) The device of claim 8 wherein the light output structure is one selected from the group consisting of a triangle, ridge, plane waveguides and an optical fiber.

10. (Original) The device of claim 1 wherein the substrate is one selected from the group consisting of n-GaAs, n-InP, n-SiC and sapphire.

11. (Original) The device of claim 1 wherein the triangle mesa structure further comprises:

an upper waveguide mirror;

a lower waveguide mirror; and;

a waveguide layer disposed between the upper mirror and the lower mirror for vertical confinement of the light.

12. (Original) The device of claim 1 wherein the triangle mesa structure further includes an AlGaAs waveguide layer comprising:

an upper mirror selected from the group consisting of a p-type AlGaAs cladding layer and p-type AlGaAs superlattice;

a lower mirror selected from the group consisting of an n-type AlGaAs cladding layer and n-type AlGaAs superlattice; and

an upper contact layer made of p-type AlGaAs.

13. (Original) The device of claim 12 wherein the contact spots are shaped by a process selected from the group consisting of non-uniform metal deposition, metal deposition over a dielectric mask, non-uniform doping of the upper contact layer, and ion-implantation treatment of the upper contact layer.

14. (Original) The device of claim 1 wherein the contact spots are shaped by a process selected from the group consisting of non-uniform metal deposition, metal deposition over a dielectric mask, non-uniform doping, and ion-implantation.

15. (Original) The device of claim 1 further comprising a buffer layer made of BAlGaInN.

16. (Original) The device of claim 1 wherein the triangle mesa structure further includes an InGaAsP waveguide layer comprising:

an upper mirror selected from the group consisting of a p-type InP cladding layer p-type InGaAsP superlattice;

a lower mirror selected from the group consisting of an n-type InP cladding layer, n-type InGaAsP superlattice and n-type AlInGaAs superlattice; and

an upper contact layer made of p-type InP.

17. (Original) The device of claim 1 wherein the triangle mesa structure further includes an InGaN waveguide layer comprising:

an upper mirror selected from the group consisting of a p-type AlGaN cladding layer and p-type AlGaN superlattice;

a lower mirror selected from the group consisting of an n-type AlGaN cladding layer and n-type AlGaN superlattice; and

an upper contact layer made of p-type AlGaN.

18. (Original) The device of claim 1 wherein the triangle mesa structure further includes an InGaAs waveguide layer comprising:

an upper mirror selected from the group consisting of a p-type AlGaAs cladding layer p-type AlGaAs superlattice;

a lower mirror selected from the group consisting of an n-type AlGaAs cladding layer and n-type AlGaAs superlattice; and

an upper contact layer made of p-type AlGaAs.

19. (Original) The device of claim 1 wherein the triangle mesa structure further comprises an active layer selected from the group consisting of InGaAs/GaAlAs double heterostructure, InGaAs/GaAlAs single quantum well, InGaAs/GaAlAs multiple quantum wells, and current asymmetric resonance tunneling structure.

20. (Original) The device of claim 1 wherein the triangle mesa structure further comprises an active layer selected from the group consisting of InGaAsP/GaAlAsP double heterostructure, InGaAsP/GaAlAsP single quantum well, InGaAsP/GaAlAsP multiple quantum wells, and current asymmetric resonance tunneling structure.